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ABSTRACT

This document, an addition to the New Hampshire Model for Secondary School Guidance Programs, provides guidelines to help counselors select tests for occupational guidance. The career assessment instruments most commonly used in secondary schools are compared and contrasted. Publishers' addresses, costs of specimen sets and comments regarding the reliability and validity are included in the annotations. Also included are eight interest tests, three aptitude batteries, and four other standardized career development instruments: Assessment of Career Development (ACE); Career Development Inventory (CDI); Career Maturity Inventory (CMI); and Career Planning Program. Personality tests are not incorporated into the review. A brief chapter on interpreting test results with students includes questionnaires useful in systematizing the information obtained through testing. (KS)

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**CAREER ASSESSMENT INSTRUMENTS FOR
SECONDARY SCHOOL COUNSELORS**

NEW HAMPSHIRE GUIDELINES

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U.S. DEPARTMENT OF HEALTH,
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INTRODUCTION AND RATIONALE

Each year publishers introduce new instruments in the area of career assessment, they revise and restandardize existing measures, and then supplement manuals with up-dated technical reports. Keeping abreast of these changes is a difficult task at best.

In this document we will compare and contrast the most commonly used career assessment instruments available today. We have structured the information to be easily understood. However, it is important to remember that all the testing possibilities have not been exhausted. Rather, we have tried to discuss relatively popular tests in a straightforward, uncomplicated manner. In so doing, we have grouped the instruments as follows:

1. Interest Inventories
2. Aptitude Batteries
3. Other standardized tests relating to career development

Although the information for each test has been systematically presented, counselors are encouraged to compare and contrast specific instruments in terms of their own situational needs. In so doing, they will certainly want to order specimen sets and read available reviews.

THE CAREER ASSESSMENT SCENE

As mentioned earlier, the marketplace abounds with instruments which purport to measure various characteristics or factors called career interest, vocational aptitude or vocational maturity. Most secondary schools offer their students at least one opportunity for such assessment. The additional choices now presented to those who select the assessment instrument seem to confuse the issue rather than make one's job easier.

A major reason for many of the difficulties surrounding the use of test instruments in the school has been the lack of a clear understanding of their purpose. Thus a situation is created where people favor or oppose certain tests without really knowing why. To use tests effectively, counselors should know how these tests are intended to be used and what research has been done to document their reliability and validity.

Generally, these assessment tools fall into three categories:

- Career Interest Inventories
- Aptitude Measures
- Other Career Development Instruments

Career Interest Inventories

Interest inventories attempt to provide a score indicating feelings of like-dislike to a sample of items. These inventories are ordinarily considered as attempts to quantify interests or provide a score which describes a client's feelings of like or dislike—sometimes called acceptance-rejection reactions—to varied subjective areas of interest.

Aptitude Measures

Assessment in the cognitive domain is usually achieved by administering a standardized battery of tests or individual tests measuring common aptitudes for which adequate criterion data is available. An aptitude may be defined as "readiness for learning" (Thorndike Hagen, 1969). An aptitude test is, therefore, one that predicts the potential for success in some occupation or training program (Cronbach, 1970).

The Differential Aptitude Test (DAT) is the most widely used instrument of this sort in the schools. The General Aptitude Test Battery (GATB) is administered through either the schools or the State Employment Security offices. The GATB has 2 advantages over the DAT: stronger occupational norms and a relatively short testing time (2 hours).

Other Career Development Instruments

A relatively new development in measurement for vocational guidance has been the standardization of scales to assess an individual's vocational maturity. Super (1957, pg. 132) defined two constructs of vocational maturity and developed the Career Development Inventory (1965). Another new instrument of this variety is the Career Maturity Inventory. Super (1955) postulated five dimensions which might indicate mature and immature vocational behavior during adolescence:

1. Orientation to vocational choice.
2. Information and planning about the preferred occupation.
3. Consistency of vocational preference.
4. Crystallization of traits.
5. Wisdom of vocational preferences.

Super has two constructs of vocational maturity. Vocational Maturity I focuses on life stages and is indicated by the actual life stage of an individual in relation to his expected life stage (based on his/her chronological age).

Vocational Maturity II focuses on developmental tasks and is represented in the behavior of the individual in handling the developmental tasks with which he/she is coping.

Test Selection

These should always be selected with a specific purpose in mind. Lists of "recommended" tests should not eliminate the need for carefully choosing a test to suit each situation. The user of tests should constantly evaluate new developments. New instruments are marketed, new uses for tests are discovered, and new findings about old tests are brought to light. Prominence and popularity are not necessarily signs of quality. All tests have limitations. *A test only samples the behavior of an individual* and from that sampling one must draw conclusions. Caution is advised in selecting tests on the basis of research. Useful information from professional reviewers can always be obtained from Buros (1961).

In addition, the counselor must be aware of sex-role stereotyping or discrimination in testing. Two major ways in which discrimination can occur in educational testing are: reinforcement of sex-role stereotyping and the restriction of individual choices in response items.

For instance, the objective of career assessment instruments is to help individuals explore their career interest in comparison with others and to promote good life planning. However, all of the elements of interest inventory construction—item selection, scale development, and norming—have been affected by the assumption that women and men play vastly different occupational roles, a key factor in life planning. Some inventories have separate item pools for each sex. Empirically developed occupational scales often use only one sex in the criterion group. Homogeneous scales are often normed separately by sex.

Two of the major vocational/occupational interest inventories are based on empirically determined (criterion) groups in occupations. However, because fewer occupational groups have been constructed for women, a major criticism of these inventories is that an individual woman's choices are restricted—relative to a man's choices. Caution is advised in reviewing test content for possible sex discrimination before purchasing/using the instruments. For further information, the reader is referred to two reviews on sex bias as sex fairness in testing (Crump, 1974; Tittle, 1974).

SELECTED CAREER ASSESSMENT INSTRUMENTS

The purpose of this chapter is to provide information to assist counselors in comparing and contrasting the most commonly used career assessment instruments. In addition to the publisher's address and the cost of a specimen set, the annotated entry for each publication provides comments regarding the instrument's reliability and validity. The chart at the end of the chapter is an attempt to summarize the pertinent information. The instruments reviewed are as follows:

Interest Tests

1. California Occupational Preference Survey
2. Kuder General Interest Survey
3. Kuder Occupational Interest Survey
4. Kuder Preference Record—Personal
5. Minnesota Vocational Interest Inventory
6. Ohio Vocational Interest Survey (OVIS)
7. The Self Directed Search (SDS)
8. The Strong-Campbell Interest Inventory

Aptitude Batteries

1. Academic Promise Test
2. The Armed Services Vocational Aptitude Battery (ASVAB)
3. Differential Aptitude Test (DAT)

Other Career Development Instruments

1. Assessment of Career Development (ACD)
2. Career Development Inventory (CDI)
3. Career Maturity Inventory (CMI)
4. Career Planning Program

Personality tests have not been incorporated into this review. The obvious reason for excluding them is that they have not been widely accepted as desirable components of school testing programs. Moreover, the empirical utility of such tests for occupational decision making has not been clearly established.

Interest Tests

California Occupational Preference Survey

Publisher: Educational and Industrial Testing Service
PO Box 7234
San Diego, California 92107

Population: Grades 9-16 and Adults

Costs: Specimen set—\$2.25
Consumable edition—\$5.00 per 25 tests; \$4.25 per 50 profiles
Reusable Edition—\$4.25 per 25 tests; \$4.00 per 50 answer sheets
(Digital or IBM); \$3.50 per 50 profiles.
Scoring—\$7.00 per set of IBM Hand scoring stencils; \$.85 per test
for machine scoring services

Time: 30-40 minutes

Purpose: Basically, this instrument's purpose is to broaden the student's knowledge of vocations. Particular emphasis is placed on the distinction between professional and skilled employment.

Scores: In addition to outdoor and clerical interest, the COPS provides professional and skilled scores in the following areas: Science, technical, business, linguistic, aesthetic and service.

Reliability: Although the manual reports reliability information for the secondary school normative population, and although these coefficients seem reasonable, stability data for college students is not reported.

Validity: Very little validity information is presented in the manual. The studies which were reported suggest that persons working in a particular occupation tended to have high COPS scores on the logical scale.

Additional Comments: The six interest groupings are broken into professional and skilled categories. As a result, the instrument is not professionally oriented and may appeal to counselors who work with students who are not exclusively college bound.

Review: Buros—*The Seventh Mental Measurements Yearbook*, Vol. II, pp. 1402-1406

Kuder General Interest Survey (A Revision and downward extension of the Kuder Preference Record—Vocational, Form C)

Publisher: Science Research Associates, Inc.
259 East Erie Street
Chicago, Illinois 60611

Population: Grades 6-12

Costs:	Specimen set—\$1.65 Consumable (self-scoring) edition—\$8.25 per 25 tests Machine Scoring edition—\$16.50 per 25 tests; Scoring \$.75 per test
Time:	45-60 minutes
Purpose:	The general purpose of this instrument is to help the student systematically narrow the occupational field so that potentially suitable occupations can be investigated in greater depth.
Scores:	The KGIS, like its predecessor, provides ten interest scores. They are: outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical.
Reliability:	The reliability coefficients for all scales are above .70. Moreover, the low intercorrelations between scales suggest that different interests are being measured.
Validity:	Aside from face validity and the job satisfaction studies done in connection with the KPR—Vocational, predictive validity is a concern. Research which focuses on the relationship between adolescent interests and adult occupational patterns is needed.
Additional comments:	The KGIS is a revision and downward extension of the Kuder Preference Record—Vocational, Form C. Despite its technical sophistication, counselors will probably question its use with younger students.

Kuder Occupational Interest Survey—Form DD

Publisher:	Science Research Associates, Inc. 259 East Erie Street Chicago, Illinois 60611
Population:	Grades 11-16 and adults
Costs:	Specimen set—\$2.50 (including scoring) Consumable edition—\$30.00 per 20 tests (price includes scoring service)
Time:	30-40 minutes
Purpose:	The KOIS is useful in the sense that it supplies information which may help individuals make a vocational choice or decide tentatively on a field of study. KOIS scores attempt to show how an individual's preferences compare to those common among people in various occupations and fields of study.
Scores:	For men, the KOIS provides 77 occupational and 29 college majors for a total of 106 scales. The 84 women's scales include 57 occupational and 27 college majors.
Reliability:	Test-re-test reliability coefficients (2-week time intervals) were reasonably stable for 12th grade and college students. Long range reliability coefficients for selected samples were similarly adequate.
Validity:	Studies which compare the KOIS and the Strong Vocational Interest Blank have typically revealed low positive correlations between

similar scales on the two instruments. Concurrent validity studies suggest that the KOIS is able to discriminate between various existing criterion groups.

Additional Comments: The KOIS is comparable to the SVIB. Although the Kuder includes college major scales, the Strong is probably superior with respect to reliability, validity, and ease of interpretation.

Review: Buros, *The Seventh Mental Measurements Yearbook*, Vol. II, pp. 1427-1432.

Kuder Preference Record—Personal, Form A

Publisher: Science Research Associates, Inc.
259 East Erie Street
Chicago, Illinois 60611

Population: Grades 9-12 and adults

Costs: Package of 25 test booklets—\$30.75. Set of 50 answer sheets—\$25.88

Time: Approximately 40 minutes

Purpose: While the Kuder General Interest Survey identifies an individual's preferences in ten broad occupational areas, the *Personal* helps determine the kind of situation in which he/she prefers to work.

Scores: The KPR-Personal is made up of five scales describing different types of personal and social activities. The scales are: Group activity, stable situations, dealing with ideas, avoiding conflict, and directing others. These scales are designed to supplement the ten vocational preference area scales.

Reliability: The manual reports split-half or internal reliability coefficients separately for each of the five scales and for males and females in adult, college and high school samples. All but three of the 30 coefficients are in the .80's.

Validity: The manual contains very little data concerning the relationship between job satisfaction and preferences, but this is attributed to the difficulty of finding enough people who dislike their work. The average scores of men and women in over fifty occupational categories who are satisfied in their work suggest that there are differences between occupational groups on the scales.

Additional Comments: Many counselors may want to use the KRP-Personal in conjunction with the Kuder Occupational Interest Survey. The relative independence of the scales suggests that this is reasonable. However, interpretation of results should take into consideration the difficulties associated with establishing the instrument's validity.

Minnesota Vocational Interest Inventory

Publisher: The Psychological Corporation
304 East 45th Street
New York, New York 10017

Population: Males 15 and over not planning to attend college

- Costs:** Specimen set—\$1.00
National Computer Systems (NCS) edition (machine scoring only)—\$4.50 per 25 test-answer sheets; scoring service—\$.33 to \$.85 per test, depending on immediacy of service.
Measurement Research Center (hand scoring options) editions—\$5.50 per 25 tests; \$.50 per 50 answer sheets; \$2.00 per 50 profiles; \$7.00 per set of hand scoring stencils; \$.33 to \$.45 per answer sheet for machine scoring.
- Time:** 45-50 minutes
- Scores:** In addition to nine area scales (mechanical, health service, office work, electronics, food service, carpentry, sales-office, clean hands, and outdoors), the MVII provides scores relative to 21 occupations.
- Purpose:** This instrument was constructed to measure the interest of non-professional men.
- Reliability:** Test-re-test reliability coefficients over a 30-day interval ranged from .64 to .88 for the occupational scales and from .62 to .87 for the area scales.
- Validity:** The instrument's validity was in part determined by showing the "percentage of overlap" between men in these various occupational groups and tradesmen in general. These percentages ranged from 27 for Industrial Education Teachers and Radio-IV repairmen to 63 for stock clerks.
The validity of the instrument for secondary school males has not been determined.
- Additional Comments:** The MVII is an ipsative instrument; hence, an individual who is high on some scales must be low on others. While the authors argue that the empirically constructed scoring keys minimize the limitations associated with the ipsative procedure, scores should be interpreted with caution.
- Review:** Buros—*The Seventh Mental Measurements Yearbook*, pp. 1432-1438.

Ohio Vocational Interest Survey (OVIS)

- Publisher:** Harcourt, Brace, Jovanovich, Inc.
757 Third Avenue
New York, New York 10017
- Population:** Grades 8-12
- Costs:** Specimen set—\$1.75
Reusable edition—\$9.50 per 35 tests; \$4.00 per 35 answer sheets (MCR); \$2.50 per manual. Scoring service must be used—\$.60 and over per test.
- Time:** 60-90 minutes
- Purpose:** The primary purpose of the OVIS is to help students to understand their interests and to relate them to the world of work.

- Scores:** Among the 24 occupational areas for which scores are provided are machine work, customer service, teaching-counseling and social work.
- Reliability** Test-re-test reliability coefficients for samples of eighth and tenth graders are reported. The coefficients are approximately .80 for each of the 24 scales.
- Validity:** Validity data is not reported. In the authors' opinion, "the use of the results in predicting future behavior is not considered to be as important as their immediate use in career orientation and vocational exploration."
- Additional Comments:** The authors have accepted the *Dictionary of Occupational Titles*' idea that jobs can be described most effectively in terms of involvement with data, people and things.
- Review:** Buros, *The Seventh Mental Measurements Yearbook*, pp, 1441-1444.

The Self-Directed Search (SDS)

- Publishers:** Consulting Psychologists Press
577 College Avenue
Palo Alto, California 94306
- Author:** John L. Holland
- Population:** Grades 9-12
- Costs:** Specimen set
Consumable edition—self scored, \$.75 per student
- Time:** 40-60 minutes
- Purpose:** The SDS, a self-administered, self-scored, and self-interpreted vocational tool, has two main purposes: 1) to provide people with a vocational counseling experience; and 2) to multiply the number of people a counselor can serve.
- Scores:** The assessment booklet follows Holland's theory of vocational choice. As a consequence, it is organized in terms of his six personality types (realistic, investigative, artistic, social, enterprising, and conventional). Separate sections on occupational daydreams, activities, competencies, occupations and self-estimates determine a person's resemblance to each type.
- Reliability:** This manual does not provide explicit reliability data. The author maintains that the SDS is an explicit outcome of prior theoretical work and users are encouraged to review this work.
Internal consistency coefficients for the activities competencies and occupational sales are reported. With one exception, these coefficients are in the .70's and .80's.
- Validity:** The construct and predictive validity of the scales is tied to the previous theoretical work in the area of vocational choice. Again, users are encouraged to review this work.

Additional Information: As noted, the SDS is an outgrowth of Holland's theory of vocational choice. Basically, the work done in connection with their theory has resulted in the definition of six personality types. The activity competency and occupational dimensions emerged from the search for correlates of these personality scales.

The Strong-Campbell Interest Inventory

Publisher: Stanford University Press
Stanford, California 94305

Population: Ages 16 and over

Costs: Specimen set—\$2.00
Reusable edition—\$6.00 per 25 test booklets; \$6.75 per 50 answer sheets; \$5.00 per manual. Scoring—machine scoring only at \$1.25 to \$1.75 per answer sheet.

Time: 30-60 minutes

Purpose: The SCII should perform one or both of two principal functions. First, it should tell people something about themselves and their relationship to the world of work in the belief that the greater self-understanding will result in better decisions. Second, it should enable professionals—counselors, teachers, personnel managers—to consider the unique qualities of each individual.

Scores: The SCII gives the respondent three main types of information: 1) Scores on general occupational themes, which reflect the respondent's overall occupational orientation; 2) scores on 23 specific area scales including art, science, and public speaking; and 3) scores on 124 occupational scales which indicate the degree of similarity between the respondent's interests and those of men and women in a wide range of occupations.

Reliability: The earlier Strong Vocational Interest Bland was thoroughly studied with respect to test-retest reliability. The resultant correlations ranged from the .50's for 16-year-olds retested after 36 weeks to the .90's for samples retested over periods as short as a few weeks. Age and re-test interval were the most important factors in accounting for correlation variability. However, the number of items in the scale and the degree of scale homogeneity are also factors. Because the SCII Basic Interest Scales are "slightly superior" to those of the SVIB, "the new scales should be slightly superior to the old in test-re-test reliability." Correlations for two samples tested over short periods ranged from .82 to .93.

Validity: The concurrent validity of the SCII Basic Interest Scales can be determined by examining scores of people who are working in various occupations. People should score high on scales relevant to their occupations; conversely, people should score only average or lower on scales not related to their occupations.

A substantial body of validity data is available for the SVIB. Because the SCII scales are based directly on those of the SBIV the validity studies are relevant for them also.

The predictive validity of the Basic Interest Scales is "not as good as their concurrent validity, since long-range discrimination is harder to make. . . . Nevertheless, there is considerable agreement between scores earned by students and their eventual occupations."

Despite these claims, the Strong is not without its critics. For example, in his Buros (1972) review, Katz suggests that the interest of young adults are clearly established and easily articulated. For this reason, simple ratings of interests in subject fields is generally as valid as a highly reliable, technically sophisticated instrument.

Additional Information: TheSCII is a merged form of the SVIB for men and the SVIB for women. In merging the men's and women's test booklets, an attempt has been made to "neutralize" the inventory. Individuals of both sexes can be scored on all scales, and several new scales have been added (e.g., female physicists and male elementary teachers).

TheSCII differs from the previous forms in still another significant way. An attempt has been made to equate this interest instrument with Holland's theory of vocational choice. Both the layout of the profile and the interpretation of the scores have been modified by this theoretical framework.

Aptitude Tests

Academic Promise Test

Publishers: The Psychological Corporation
304 East 45th Street
New York, New York 10017

Population: Pupils in grades 6-9

Costs: Specimen set—\$1.25
Reusable test booklets—\$5.00 per 25 booklets; answer sheets—
\$3.75 per package of 50; hand scoring stencils—\$.80 per set for
each form; manual—\$1.00. Scoring service—\$.28 per pupil.

Time: Actual testing time is 90 minutes. It may be scheduled for a single
half-day session.

Scores: The four individual tests which comprise the APT are verbal, numeri-
cal, abstract reasoning and language usage. A total score, the sum
of the scores on all four tests, is also provided.

Purpose: The APT was developed in response to the growing concern of pro-
fessional and community leaders with the educational future of
pupils in grades six to nine. While the identification of intellectually
talented pupils is possible, its principal objective is to provide a
broad and differential description of each student's abilities.

Reliability: The reliability coefficients reported for the APT are based on scores
from alternate forms administered with an interviewing time inter-
val. The range of equivalence coefficients for the four tests over the
four grades was from .81 to .90. The APT total score reliability was .93
or .94 for each of the grades.

Validity: The manual focuses considerable attention on the relationship be-
tween the APT and performance in English, mathematics, social
studies, science, business and vocational courses. This data is reported
separately for each grade level and school but summary tables
enable the reader to form a general impression. Although consid-
erable variability is evident, the APT generally predicts student
performance well.

The APT was also validated in terms of achievement test scores.
The coefficients reveal that the APT could be useful as a predictor
of future learning as measured by achievement test scores.

Additional Comments: Despite its limited range of appropriateness (grades 6-9), the APT
could be a useful tool for educational counseling and placement.

The Armed Services Vocational Aptitude Battery (ASVAB)

Publisher: Armed Forces Vocational Testing Group
Universal City
Texas 78148

- Population:** Primarily high school seniors, but lower classes may also be tested
- Costs:** The battery, including test scoring and related research, is offered at no cost.
- Time:** 2½ hours
- Purpose:** The purpose of the ASVAB is to identify combinations of abilities which are relevant to success in particular clusters of jobs. The military services also want to stimulate interest in their many jobs and training opportunities.
- Scores:** The ASVAB is a battery of nine tests derived from "common" content among the military aptitude batteries. Scores on all nine subtests as well as five composites are reported for individual students. Scores are: Coding speed, word knowledge, space perception, mechanical comprehension, shop information, automotive information, information and electronics information. The aptitude composites are: General-technical, clerical-administration, electronics, general mechanics and motor mechanics.
- Time:** Actual testing time is 112 minutes. With administration, the ASVAB requires approximately 2½ hours.
- Reliability:** The ASVAB counselor's manual provides two types of reliability information. Split-half coefficients for eight of the tests ranged from .78 (tool knowledge) to .87 (word knowledge and arithmetic reasoning) (note: coding speed was not included). Alternate form coefficients ranged from .73 (mechanical comprehensive) to .86 (coding speed and arithmetic reasoning).
The ASVAB authors conclude that the ASVAB reliability indexes are acceptable for individual counseling.
- Validity:** Validity coefficients employing four of the aptitude composites (general mechanical, general-technical, clerical-administrative, and electronics) and final grades in 46 military services training courses, were reported in the counselor's manual. Visual inspection of coefficients in terms of their logical relevance suggested substantially significant correlations, particularly for those corrected for limited variability.
- Additional Comments:** As an instrument administered, scored and interpreted without cost to its local users, the ASVAB will be attractive to many systems. However, because its stated purpose focuses attention on the relationship between aptitude clusters and career opportunities in the military, counselors will most probably use the battery as an adjunct in the school testing program.

Differential Aptitude Tests (DAT)

- Publishers:** The Psychological Corporation
304 East 45th Street
New York, New York 10017
- Authors:** Bennett, Seashore and Wesman
- Population:** Grades 8-12 and adults (N.B., no adult norms)

Costs:	Specimen set—\$3.00 Reusable edition—test booklets—\$17.60 per 25 copies of the complete battery; answer sheets—from \$10.00 per 50; report forms—from \$1.40 per 50; scoring stencils—from \$.80 per set; casebook—\$1.25; manual—\$2.50. Scoring service—from \$.25 to \$.50 and over per student, depending on service agent, options, and the like.
Time:	Approximately 223-245 minutes in from two to six sessions
Purpose:	The DAT battery was developed to provide an integrated, scientific, well-standardized procedure for measuring the abilities of boys and girls in grades 8-12 for purposes of educational and vocational guidance.
Scores:	The original DAT (forms A and B) was published in 1947. The battery was revised and restandardized in 1962 (Forms L and M) and again in 1972 (Forms S and T). The battery continues to include eight tests. These are: verbal reasoning, numerical ability, abstract reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling and language usage. A combined VR and NA score is also reported. It might be noted that the spelling and language usage tests are most properly achievement measures; but they are included because of their probable curricular and or vocational relevance.
Reliability:	The manual reports split-half reliability coefficients for all tests except clerical speed and accuracy. Because this instrument is timed, an alternative form procedure was employed to demonstrate consistency. Coefficients, reported separately for each form by sex and grade, attest to a high degree of internal stability. Alternate form equivalence, which reflects the stability of the DAT over time, is reported separately. Again, a reasonably high degree of correspondence is evidenced.
Validity:	The DAT Fifth Edition Manual maintains that Forms S and T were constructed to measure abilities identical to earlier forms; hence, the results of validity studies for the earlier versions should be applicable. The largest number of validity coefficients reported in connection with the newest forms involves the prediction of grades obtained by students in specific courses. Correlations are reported between the separate course grades and each of the nine DAT scores. The logically relevant relationships are typically significant for zero-order coefficients at the .01 level of confidence. The relationship between the DAT and a variety of standardized achievement batteries and aptitude tests are reported. Again, these relationships provide substantive evidence of the DAT's validity.
Additional Comments:	Reviewers generally consider the DAT to be the "best" instrument of its kind. The battery provides a series of relatively independent tests which are not difficult to administer and score. In addition, material has been thoughtfully prepared to aid in the interpretation of results.

Other Instruments

Assessment of Career Development (ACD)

Publisher: The American College Testing Program
Houghton Mifflin Company
Boston, Massachusetts

Population: 8th through 11th grade students

Costs: Specimen set—\$3.60
Reusable test booklets—package of 35 for \$13.95; handbook (including supplements)—\$2.95; answer sheets—package of 35 for \$3.75. Scoring Service—\$.75 to \$.96 per answer sheet (Note, the ACD must be machine scored)

Time: 2 hours

Purpose: The basic purpose of the ACD is to help counselors and administrators obtain information needed in developing effective career guidance programs and/or to help them assess the outcomes of such programs.

Scores: ACD results are reported for 42 specific questions (e.g., most people do not need to begin career planning until their final year in high school). The ACD also provides three measures of occupational knowledge and one of career planning. In addition, a summary of occupational experience score is reported in terms of six occupational clusters.

Reliability: According to the handbook, the ACD is a "wideband" instrument in that it is designed to cover a large number of career development components in a limited amount of time. Such instruments generally sacrifice a degree of measurement accuracy. Split-half reliability coefficients for the 11 scales range from .61 to .93, with most correlations in the .70's and .80's. Short term test-re-test reliabilities were similar.

Validity: The ACD focuses on those career development behaviors generally thought to be of practical significance in evaluating and modifying career guidance programs. Its claim to validity is based on its content. While the handbook suggests that the relationship between the ACD and other measures (e.g., DAT, Kuder-Vocational is being studied, data is not reported.

Additional Comments: The ACD does not claim to measure the psychological dimensions of vocational maturity or any other psychological construct. It should be viewed as an achievement test which may or may not be appropriate for a given career development program.

Career Development Inventory

Publishers: Unpublished

Author: Donald E. Super, Ph.D.
Professor of Psychology and Education
Teacher's College
Columbia University
New York, New York 10027

Population: Grades 7-12

Time: 45 minutes

Costs: Qualified persons wishing to use the CDI *experimentally* are authorized to reproduce it for their own use provided they agree 1) to make resulting data available for use by the authors, and 2) to use the published version rather than their own reproduction once such becomes available.

Purpose: The CDI attempts to measure vocational maturity which is defined as the manner in which adolescents cope with vocational development tasks.

Scores: The preliminary scoring system for the CDI yields one cognitive and two attitudinal scores. The 30-item cognitive scale is defined in terms of career information and decision making; the attitudinal scales include planning orientation (33 items) and resources for exploration (28 items). A total score (91 items) is also available.

Reliability: (Short term: 2-4 weeks). Test-re-test stability coefficients for the attitudinal scales were in the .80's; the author concludes that the attitude scales are reliable enough for use with individuals while the cognitive scale could be used with groups (e.g., group assessment or program evaluation).

Validity: The CDI research manual provides information relative to content, criterion related and construct validity. Content validity was established by expert judgment concerning item appropriateness. While criterion and construct validity were discussed in detail, the data was not convincing and the author concludes that further studies are needed.

Additional Comments: Vocational maturity has proved to be a difficult construct to empirically validate. This instrument, as a research tool, may be of interest to counselors who are systematically investigating vocational development in adolescence.

Career Maturity Inventory

Publisher: CTB/McGraw Hill
Del Monte Research Park
Monterey, California 93940

Author: John O. Crites

Population: 6th grade reading level through college seniors

- Costs:** \$24.00 for package of 35 test booklets and answer sheets. \$.55 per student for machine scoring.
- Time:** Total testing time approximately 2½ hours
- Purpose:** The CMI was conceived and constructed to measure the maturity of attitudes and competencies that are critical in realistic career decision making.
- Scores:** The Attitude Scale elicits the feelings, the subjective reactions and the dispositions that the individual has toward making a career choice and entering the field of work. The competence test measures the more cognitive variables involved in choosing an occupation. These include self-appraisal, occupational information, goal selection, planning and problem solving.
- Reliability:** Reliability information for samples in grades 6-12 is presented separately for the two scales. The interval consistency of the Attitude Scale ranged from .65 (grade 0) to .84 (grade 5) with a mean coefficient of .74. Stability of this scale over time was thought to be contrary to the theoretical proposition that vocational behavior matures with time.
- Internal consistency coefficients for the Competence Scale range from .58 (problem solving, grade 6) to .90 (goal selection, grade 12, and Planning, grades 11 and 12). Again, indications of stability over time were not reported.
- Validity:** Content, criterion-related and construct validity were also discussed separately for the two scales. For example, the manual explains that the Attitude Scale's items were selected using an empirical procedure for internal standardization and that this constitutes "presumptive substantive evidence" of the scale's content validity. Research which reports on the relationship between the Attitude Scale and the various criterion variables (e.g., the Occupational Aspiration Scale, Indices of Vocational Maturity is also discussed). Finally, the Attitude Scale's construct validity is explored in terms of response bias, correlations with other variables and experimental manipulations of counseling and didactic experiences.
- According to the manual, the validation of the Competence Scale has just begun. However, some data evidence is presented relevant to its usefulness as a measure of career maturity.
- Additional Comments:** The CMI was formally entitled the Vocational Development Inventory. It focuses on young people's changing readiness and competence to enter and compete in the world of work.

Career Planning Program

Publisher: The American College Testing Program
Houghton Mifflin Company
Boston, Massachusetts

Population: 8th through 11th grade students

Costs:	Specimen set—\$4.50 Reusable edition—handbook—\$3.00; Supervisor's manual—\$.45; Booklet 1 (Interests and Experiences)—package of 35 for \$21.75; Booklet 2 (Abilities)—package of 35 for \$21.45; answer folder— package of 35 for \$7.35; norms—\$.75. Scoring Service—\$.90 per student
Time:	One session—91 minutes; two sessions—96 minutes; three sessions— 101 minutes
Purpose:	The central goal of this assessment-based career guidance model is to stimulate and facilitate self and career exploration, including self in relation to careers.
Scores:	The CPP assessment components fall into two general categories. The formal components include six interest and experience scales (e.g., social service, technical) as well as six ability scales (e.g., mechanical reasoning, numerical skills). National norms are available for these scales. The informal components include three separate preference scales as well as indices of educational plans, job values and self-rated abilities. National norms are available for all but the last of these components.
Reliability:	Internal estimates of reliability for the Ability Scales, which were constructed as "wideband" measures, range from .77 (mechanical reasoning, grade 8) to .91 (space relations, grades 8 and 11). Corre- lations for the interest scales were generally in the .80's, while ex- perience scales reliabilities were in the .70's and .80's. Test-re-test reliability coefficients, covering a period of approxi- mately nine weeks between administrations, were somewhat lower for all three components. Coefficients for the 11th grade sample were in the .70's and .80's, but reliabilities for the 8th grade sample varied from .59 (clerical skills) to .86 (technical experience).
Validity:	The Handbook provides detailed information with reference to both criterion-related and construct validity. As an example of the former, the relationship between the Ability Interest and Experience Scales and performance in various academic, vocational, and tech- nical courses was determined. The median correlations coefficient for 23-stanine composit comparisons was .59. The handbook also provides information concerning the relation- ship between the CPP and such criterion instruments as the Vo- cational Preference Inventory and the Differential Aptitude Tests. In terms of construct validity, the Handbook includes a lengthy dis- cussion concerning the development of a new occupational classi- fication system. While explained as a compromise, the authors are convinced that it does help students identify and explore career options.
Additional Comments:	The authors emphasize that the major role of tests in career guid- ance is to stimulate career exploration and the exploration of self in reaction to careers. The focus which assessment procedures provide should point to regions in the world of work which young people may want to explore.

COMPARATIVE MATRIX OF ALL INSTRUMENTS

Instrument	Administrative Time	Approximate Cost Per Student	Audience	Comments
California Occupational Preference Survey		.49—hand scored 1.10—machine scored	Grades 9-16	
Kuder General Interest Survey	45-60 minutes	.33—hand scored 1.40—machine scored	Grades 6-12	A revision and downward extension of the Kuder Preference Record—Vocational, Form D
Kuder Occupational Interest Survey Form DD	30-40 minutes	Machine Scored— 1.50 per student	Grades 11-16 and adults	
Kuder Preference Record Personal, Form A	Approximately 40 minutes	1.74 per student— self-scoring only	Grades 9-12 and adults	
Minnesota Vocational Interest Survey	45-50 minutes	.45—hand scored .51 to 1.05 for machine scored	Age 15 and over not planning to attend college	For boys only
Ohio Vocational Interest Survey (OVIS)	60-90 minutes	Machine scored only— 1.00 per student	Grades 8-12	
The Self-Directed Search	40-60 minutes	.75 per student— self-scored	Grades 9-12	
The Strong-Campbell Interest Inventory	30-60 minutes	Machine Scored only— 1.60-2.10 per student	Age 16 and over	For use with mature high school students

COMPARATIVE MATRIX OF ALL INSTRUMENTS (cont'd)

Instrument	Administrative Time	Approximate Cost Per Student	Audience	Comments
Academic Promise Test	90 minutes	.40—hand scored .70—machine scored	Grades 6-9	
The Armed Services Vocational Aptitude Battery (ASVAB)	2½ hours	no charge	High School	
Differential Aptitude Test (DAT)	235-245 minutes in 2-6 sessions	1.00—hand scored 1.25 and up for machine scored	Grades 8-12 and adult	No adult norms
Assessment of Career Development (ACD)	3-45 minute sessions or 1 session of about 2 hours	Machine scoring only— 1.25-1.50 per student	Grade 8-11	
Career Development Inventory (CDI)	45 minutes	For experimental use —See Text—	Grades 7-12	Instrument is to be used experimentally. Qualified persons should seek authorization for use from the author.
Career Maturity Inventory (SMI)	2½ hours	.75—hand scored 1.30—machine scored	Sixth grade reading level through College seniors— Primary Grades 8-12	
Career Planning Program	90-100 minutes	1.25—hand scored 2.15—machine scored	Grades 8-11	Used for self and career exploration.

INTERPRETING TEST RESULTS WITH STUDENTS

While a detailed exploration of specific methods of test interpretation is beyond the scope of this document, we would like to offer several principles for examination and consideration.

1. The scores belong to the testee.

In times past, school systems may have administered tests solely to evaluate program and/or personnel effectiveness. While this may still be a legitimate objective, the most important consideration is the individual's right to information about himself/herself. Every individual who is asked to take a test is entitled to the results.

2. Error is inherent.

Because a test is a sample of behavior, error is inherent. A test score should be considered as a range of possible scores, and test interpretation should take this into consideration. A useful statistic in this context is the Standard Error of Measurement, an application of a test's reliability for groups of people to an individual's score. Many publishers routinely report Standard Error information in the manual, while others translate it into percentile bands. If it is not reported, it can be readily calculated.

3. Self-understanding is crucial

Test interpretation should contribute to the individual's self-understanding. In this context it may be important to heed Meyering's (1968) warning. He suggests that a test score is "nothing more than a symbol of counselee behavior, interpreted subjectively by the counselee" (p. 48). For this reason, it may be advisable to discuss the individual's perceptions of his/her performance and to help him/her understand it.

4. A test is a tool.

Because a test is a tool in the process of self-understanding, the counselor must be skillful in its use. He/she must be intimately familiar with the instrument, fully cognizant of its potential for good as well as harm. In this context an effectively prepared test manual is an invaluable aid. The counselor will also be well advised to take the test to examine his/her performance in terms of his/her expectations, and to place himself/herself in the client's shoes.

5. Interests and aptitudes are not synonymous.

The Minnesota Vocational Interest Inventory's Manual contains repeatable caution. In essence, it maintains that interests are not capacities but rather motivation dispositions. Because interest does not necessarily imply ability, it should be used in conjunction with other factors in choosing an occupation.

6. Test results are not fixed and immutable.

Because test results vary over time, counselors must develop and implement policies to insure the systematic review of permanent files. The Russell Sage Foundation's *Guidelines for the Collection, Maintenance and Dissemination of Pupil Records* (1970) should be examined. And counselors would be well advised to familiarize themselves with federal laws which relate to recordkeeping.

7. A little testing goes a long way.

Counselors should be aware of the dangers of overtesting. Testing requires a great deal of energy—for those who take them as well as those who are involved in the administration-scoring-interpreting process. Hence, tests should not be given unless there is a clearly significant reason to do so.

8. Tests predict for groups of individuals.

While test results are often used in counseling individuals, we must remember that their predictive validity is determined for groups of individuals with similar scores. Many counselors find expectancy tables useful in communicating this fact to their clients.

9. Tests are not an affective criteria for human behavior.

As pointed out, we have evidenced a tendency to use tests as a criteria for affective behavior by requiring that people successfully perform before they are allowed to attempt a particular activity. In light of the limitations inherent in all tests, this practice is questionable. What we might instead strive to do is enable people to make informed and enlightened decisions about themselves.

10. Some tests assume that men and women must play vastly different occupational roles.

While some aptitude and interest scales consider it desirable to norm separately according to sex, counselors must be aware of sex-role discrimination through stereotyping in testing. For further information, the reader is referred to two reviews on sex bias and sex fairness in testing (Crump, 1974; Tittle, 1974).

Many of the tests reviewed are conducive to group discussion and interpretation. The manual of each publication will give some suggestions for interpretation of results. The following questionnaires are examples of guidelines for the Kuder and the ASVAB that might prove helpful in facilitating group discussions. The reader is encouraged to design his or her own questionnaire keeping in mind that the questions should stimulate thinking and exploration.

Questionnaire—Kuder Interest Inventory

Name _____

Date _____

- A. Why doesn't the "Interest Inventory" have *right or wrong* answers?
- B. Why would it be impossible for this to tell you exactly *what kind of job you would be successful at*?
- C. Explain why you think this test has/has not been a fairly accurate indication of your interests.
- D. In what area did you receive your highest score? _____
- E. How many percent of the male/female population are *below* you in this? _____
- F. In what area did you receive your *second highest* score? _____
- G. How many points above/below the 50th percentile is this score? _____
- H. What area is your *third highest* score in? _____
- I. How many percentile points difference is there between your lowest and highest score? _____
- J. What is your lowest score on the entire test? _____
In what area? _____
- K. Name two jobs listed in this lowest area you **WOULDN'T EVER WANT TO DO**.
1. _____ 2. _____
- L. What things don't you like about the above jobs?
- M. Name 3 jobs listed under your *highest* score which you **WOULDN'T LIKE TO DO**.
1. _____ 2. _____ 3. _____
- N. What is there about these jobs which you find unattractive?
- O. Name the most interesting job listed under your highest score. _____
- P. Tell me all you know about it, making sure to include why you think you would like to do it.
- Q. In your *second highest* area, name one job which you find interesting, but don't know much about. _____

R. In your third highest area, name one job which promises a good future and tell why this job looks financially secure. _____

REASON THERE IS A NEED FOR THIS JOB IS THAT

S. Combine your two highest area NUMBERS (OUTDOOR—0 + LITERARY—6x16) and list 3 jobs which combine these two interests.

1. _____ 2. _____ 3. _____

T. Which one of the three would you be most successful in doing and why?

U. Combine your *highest and third highest* score to find one job you could possibly find an interest in. Name the job and tell what training you think you would need. _____

TRAINING NEEDED:

V. What area/job have you already read pamphlets about? _____

W. In what area does this job category fall on the Kuder Profile Sheet? _____

X. If this job you've already looked up ISN'T AMONG YOUR THREE HIGHEST SCORES, do you think the test is inaccurate? Give reasons.

Contributed by Diane Brennan, Spaulding High School, Rochester, NH

Student Copy
Understanding My Aptitudes Worksheet

(On this sheet you will learn what specific conclusions can be drawn from your ASVAB scores.)

1. List the aptitude areas which are your particular strong ones:

2. In what percentile does your General Tech score fall? _____

3. What does this score indicate to you? _____

4. List some careers that make use of your strong ASVAB aptitude areas:

5. How do you see yourself in light of the information gathered from ASVAB?

The exact material here was extracted from the publication *Career Guidance in the classroom*—A resource and instructional manual, Ronald Pastrana.

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